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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/849,581	05/03/2001	Vladimir V. Katzman	MULT1795	8916

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Douglas A. Chaikin, Esq.
Peninsula IP Group
26150 Bucks Run
Corral deTierra, CA 93908

EXAMINER	
PATHAK, SUDHANSHU C	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/849,581	KATZMAN ET AL.	
	Examiner	Art Unit	
	Sudhanshu C. Pathak	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *May 3rd, 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *28-31* is/are allowed.

6)☒ Claim(s) *1-5 and 20-22* is/are rejected.

7)☒ Claim(s) *6-19 and 23-27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *May 3rd, 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-to-31 are pending in the application.

Specification

2. The disclosure is objected to because of the following informalities:

   The Specification on Page 2, lines 11 refers to "technology has went from analog systems", this should actually be "technology has gone from analog systems".

   Appropriate correction is required.

Claim Objections

3. Claim 5 is objected to because of the following informalities:

   Claim 5 discloses a "clock detecting means comprises; a clock detecting means magnetic directional coupler..."

   This should actually be "clock detecting means comprises; a magnetic directional coupler...". Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

   (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-2 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siegel (4,998,295) in view of Kim (6,323,741).

Regarding to Claims 1-2 & 20, Siegel discloses an apparatus for receiving and generating clock and data signals from information received on a transmission line (Abstract, lines 1-8 & Fig. 1 & Column 1, lines 29-40 & Column 2, lines 60-68 & Claim 1) comprising a clock detecting means for recovering and generating a clock signal from the received transmission line information (Abstract, lines 1-8 & Fig. 1, element 26 & Column 1, lines 29-40 & Column 2, lines 15-45 & Claim 1); data detecting means enabled by the recovered clock signal for recovering and generating data contained in the received transmission line information (Fig. 1, elements 18-24 & Column 1, lines 29-40, 45-68 & Column 2, lines 1-15 & Claim 1); and a coupling means having magnetically coupled microstrip lines coupled with the transmission line for receiving the transmission line information and with the clock and data detecting means for applying the received transmission line information to the clock and data detecting means (Fig. 1, element 12 & Column 1, lines 54-57 & Column 2, lines 13-17 & Claim 1). Siegel also discloses implementing the receiver for an electrical signal instead of the optical signal as described in detail wherein such case the transmission lines comprise electrical conductors and also the couplers would be electrical couplers and photodiodes would not be needed and the signals could be Manchester coded pulses (Column 2, lines 60-68). Siegel also discloses the coupler receiving the transmission line information and applying the received signal to the clock detector and for magnetically coupling the received signal to the data detecting means (Fig. 1, elements 10-14, 30 & Column 1, lines 55-57 &

Column 2, lines 13-15 & Claim 1). However, Siegel does not disclose the coupler to be a directional microstrip coupler comprising a pair of magnetically coupled microstrip transmission lines positioned in a parallel relationship with one microstrip transmission line for receiving and applying the transmission line information to the data detecting means and for magnetically coupling the received transmission line information to the other microstrip transmission line for transmission to the clock detecting means.

Kim discloses a directional microstrip coupler comprising a pair of magnetically coupled microstrip transmission lines positioned in a parallel relationship with one microstrip transmission line and for magnetically coupling the received transmission line information to the other microstrip transmission line (Fig.'s 1-2 & Column 1, lines 13-65 & Column 2, lines 3-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Kim teaches a directional microstrip coupler comprising a pair of magnetically coupled microstrip transmission lines positioned in a parallel relationship with one microstrip transmission line and for magnetically coupling the received transmission line information to the other microstrip transmission line, and this can be implemented in the receiver as described in Siegel so as to detect the clock and the data, in parallel, from the signal received by the coupler from the transmission line. Furthermore, it is a matter of design choice as to which port the data detector or the phase detector are connected to, there is no criticality in connecting the

data detector on the first transmission line (through port) and the clock detector on the other transmission line (coupled port).

6. Claims 3 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siegel (4,998,295) in view of Kim (6,323,741) in further view of Rhyne et al. (4,636,927).

Regarding to Claim 3 & 21, Siegel in view of Kim discloses an apparatus for recovering a clock and data signals from the received information signal comprising a clock detecting means, a data detecting means, enabled by the recovered clock, for detecting data and a directional coupling means for magnetically coupling the information signal to the clock detecting means and the data detecting means as described above. However, Siegel in view of Kim does not disclose a class B narrow band amplifier having an input connected to the other microstrip transmission line for receiving the magnetically coupled transmission line information and amplifying positive and negative pulses of the received transmission line information and applying the amplified pulses as a distorted sine wave to the clock detecting means.

Rhyne discloses a DC to AC converter comprising a Class B amplifier for converting and amplifying positive and negative pulses to a sine wave (Abstract, lines 1-7 & Fig.'s 2-6, element 14 & Column 6, lines 9-16). Rhyne further discloses that to achieve maximum efficiency in the amplifier it is required for the negative and positive supply voltages of the amplifier to be at their peak values, this however causes distortions in the output AC voltage of

the converter, and thus provides a tradeoff between amplifier efficiency and output distortion (Column 6, lines 15-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Rhyne teaches a converter to convert incoming pulses (digital signal) to a corresponding sine wave (analog signal), and simultaneously amplify the signal before processing and this converter can be implemented in the clock and signal recovery apparatus as described in Siegel in view of Kim so as to more accurately determine the clock of the incoming received signal and further provide an highly efficient amplification of the signal, thus satisfying the limitations of the claim.

7. Claim 4-5 & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siegel (4,998,295) in view of Kim (6,323,741) in further view of Rhyne et al. (4,636,927) in further view of Dent (US 2001/0030581).

Regarding to Claims 4-5 & 22, Siegel in view of Kim in further view of Rhyne discloses an apparatus for recovering a clock and data signals from the received information signal comprising a clock detecting means, a data detecting means, enabled by the recovered clock, for detecting data and a directional coupling means for magnetically coupling the information signal to the clock detecting means and the data detecting means, and a class B amplifier having an input connected to the other microstrip transmission line for receiving the magnetically coupled transmission line information and amplifying positive and negative pulses of the received transmission line information and applying the amplified pulses as a distorted sine wave to the

clock detecting means as described above. However, Siegel in view of Kim in further view of Rhyne does not disclose a filter connected to an output of the class B narrow band amplifier for limiting frequencies of the output signals of the amplifier.

Dent discloses a class B amplifier operated, at near its maximum saturated power output level, for maximum efficiency operation causing multiple nonlinear distortions and intermodulation products (Specification, Page 2, Paragraphs 31-36). Dent also discloses implementing a filter at the output of an amplifier to reject the signals at the undesired frequencies, and allow only the signals at the desired frequencies (Specification, Page 4, Paragraph 48). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Dent teaches implementing a filter at the output of the an amplifier so as to eliminate the undesired signals from the output signal of the amplifier, and this can be implemented at the output of the Class B amplifier as described in Siegel in view of Kim in further view of Rhyne, so as to operate the amplifier in the maximum power efficiency mode and remove the nonlinear distortion by the output filter, thus satisfying the limitations of the claims. Furthermore, the filtered signal provided to the clock detector is a matter of design choice to provide the clock detector an amplified and undistorted signal for accurate clock detection.

Allowable Subject Matter

8. Claims 6-19 & 23-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. Claims 28-31 are allowed over the prior art of record because the cited references do not contain the specified limitations of an apparatus for recovering and generating clock and data signals from information received on a transmission line, comprising; a directional coupling means having a pair of magnetically coupled microstrip transmission lines positioned in a parallel relationship for coupling a transmission line to the data and clock generating apparatus; a class B narrow band amplifier connected to one of the directional coupling microstrip transmission lines for receiving magnetically coupled transmission line information and amplifying positive and negative pulses of the received transmission line information as a distorted sine wave; circuitry connected to an output of the class B band amplifier for defining spectral power density signals corresponding to a clock rate of the received transmission line information and defining clock signals from the distorted sine wave; a clock directional coupler coupled to a peak detector and having magnetically coupled microstrip transmission lines for receiving the defined clock signals and magnetically coupling the defined clock signals to the peak detector for determining an absence of the magnetically coupled defined clock signals as a loss of transmission line information indication; a variable magnetic

delay line and narrow band amplifier connected to the clock directional coupler wherein the magnetic delay line has a pair of magnetically coupled microstrip transmission lines with one microstrip transmission line having an input port connected to the narrow band amplifier for receiving the defined clock signals and a through pod connected through a first varactor diode to ground and with another microstrip transmission line having a coupled pod connected through a second varactor diode to ground and an isolated pod output wherein a network having one end connected to the through pod of the one microstrip transmission line and an opposite end connected to the isolated pod of the other microstrip transmission line enables signals applied to a center point of the series network to vary the phase of the received clock signals; a combination of a narrow band amplifier coupled to a narrow band filter with the narrow band amplifier and filter combination having an input connected to the isolated port output of the variable magnetic delay means for amplifying the clock signals and eliminating high order harmonics appearing in the clock signal input; data detecting circuitry having a memory device with one input connected to the directional coupler means other microstrip transmission line for receiving the transmission line information output of the directional coupling means and with another input for receiving control signals determining magnitudes for recording the transmission line information and regenerating data signals from the received transmission line information in response to the generated clock signals; and a data

detecting directional coupler having a pair of magnetically coupled microstrip transmission lines one of which receives the recovered clock signals for applying the received recovered clock signals to a clock input of the memory device and another one of the microstrip transmission lines for magnetically coupling the recovered clock signals to a peak detector connected thereto for detecting an absence of magnetically induced clock signals as a loss of clock signal. Furthermore, the cited references do not also contain the specified limitations of a magnetic delay line for delaying and varying phases of clock signals comprising; a pair of magnetically coupled microstrip transmission lines positioned in a parallel relationship with one microstrip transmission line having an input port for receiving the clock signals and a through pod connected through a first varactor diode to ground and with another microstrip transmission line having a coupled port connected through a second varactor diode to ground and an isolated port output and having a network with one end connected to the through port of the one microstrip transmission line and an opposite end connected to the isolated port of the other microstrip transmission line for enabling signals applied to the network to vary the phase of the received clock signals.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, it is recommended to the applicant to amend all the claims so as to be patentable over the cited prior art of record. A detailed list of pertinent references is included with this Office Action (See Attached "Notice of References Cited" (PTO-892)).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)-272-3056
- The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sudhanshu C. Pathak

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600